



**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In re Application of:

Group Art Unit: 2624

Hwai-Tzue Tai, et al.

Examiner: James A. Thompson

GRAY LEVEL HALFTONE  
PROCESSING

I hereby certify that this correspondence is being deposited today with the United States Postal Service as first class mail in an envelope addressed to: Mail Stop - Amendment, Commissioner For Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

Serial No. 09/629,993

*Debra Nowacki*  
Debra Nowacki

Filed: August 1, 2000

*June 29, 2006*  
Date

**Mail Stop - Amendment**  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Sir:

**DECLARATION UNDER RULE 37 CFR 1.132**

In response to the Office Action dated March 7, 2006, attached hereto is a 5 page Declaration under 37 CFR 1.132, executed by Hwai T. Tai, an inventor of the present application and the cited Tai patent.

Respectfully submitted,

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If the Examiner is unable to reach the Applicant(s) Attorney at the telephone number provided, the Examiner is requested to communicate with Eastman Kodak Company Patent Operations at (585) 477-4656.



I, Hwai-Tzue Tai, do hereby declare that:

1. I am an inventor of the above-identified patent application.
2. I have reviewed the 35 U.S.C. §103(a) rejection ("the Rejection") of the claims of the above-identified patent application set forth in the Office Action dated March 7, 2006 ("the Office Action"), in which U.S. Patent No. 5,396,584 ("the Lee et al. Patent") has been combined with U.S. Patent No. 5,956,157 ("the Tai Patent").
3. I am the inventor of the Tai Patent.
4. I graduated from the University of Pittsburgh in 1982 with a Ph.D. in electrical engineering. I have worked in the field of image and color science related to electrophotographic processes and digital printing with Eastman Kodak Company from 1982 until 1998 and with NexPress Digital LLC, now fully-owned by Kodak, from 1998 until the present. I am an inventor on more than 30 patents in the fields of image processing and digital printing.
5. It is my opinion that combining the teachings of the Lee Patent with the teachings of the Tai Patent as set forth in the Office Action would lead to serious image quality problems for at least the following reasons.
6. I understand the Lee Patent, as shown in its FIGS. 19a and 19b, to teach replacing edge pixel values 642, 644, 646, and 648 with pixel values 643, 645, 647, and 649, respectively, in order to improve the appearance of an image edge.
7. The Tai Patent teaches, among other things, an image reproduction process, in which one or more different screens may be applied to different portions of an image, depending upon contrast levels associated with image pixels. See, e.g., col. 8, line 42 to col. 9, line 3.
8. According to the Tai Patent, when multiple screens are applied to a particular pixel in an image, the results of the screen applications may be blended to achieve a visually pleasing result. See, e.g., col. 9, lines

31-38 and col. 10, lines 19-23.

9. Also according to the Tai Patent, after blending, an image is produced that is ready for printing, *i.e.*, the image has a properly calibrated tone scale, properly adjusted color characteristics, and a finalized balanced halftone structure. See col. 7, lines 37-47 and FIG. 6, which describe a unified rendering process that occurs before printing with a gray level printer. See also FIG. 15. FIGs. 6 and 15 illustrate no halftone structure changes after unified rendering.
10. It is my opinion that applying the edge processing techniques of the Lee Patent to an already-blended screened image according to the Tai Patent would result in a degraded screened-image quality because the already-blended image according to the Tai Patent is already in a balanced form.
11. Stated differently, it is my opinion that modifying a post-blending, finalized image according to the Tai Patent to alter such image's screen structure edges would serve to degrade such image's appearance by, for example, causing rings and other unnatural screen structures.
12. For example, Figure A, below, illustrates a post-blending, finalized, balanced tint image field generated according to the Tai Patent. The rendered tint image is not a high contrast, saturated field but with midtone contrast.

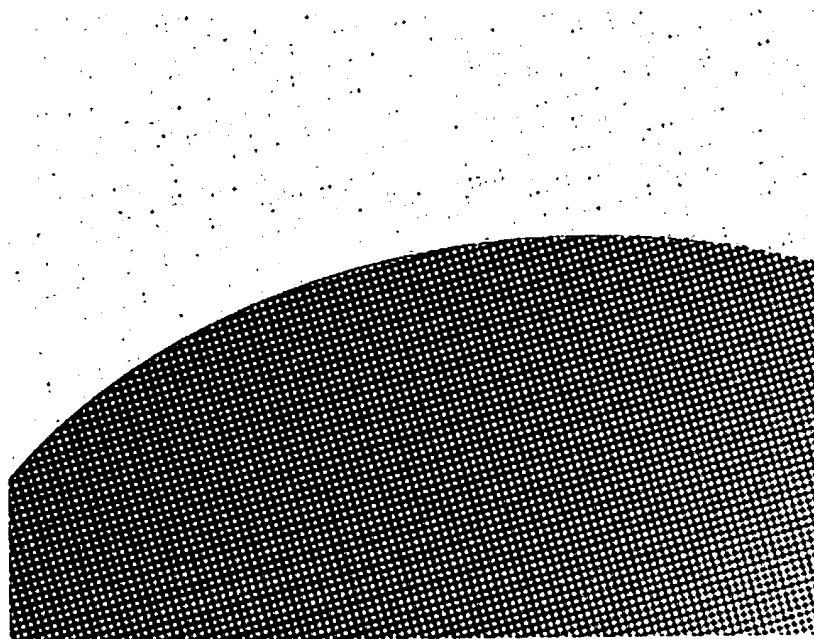


Figure A

13. Figure B, below, illustrates the result of thresholding Figure A according to step 614 in FIG. 16 of the Lee Patent. (The trace line is not part of the thresholding performed on Figure A and has been manually added to Figure B by me to illustrate what I mean by “extracted edge pixels” discussed below.)

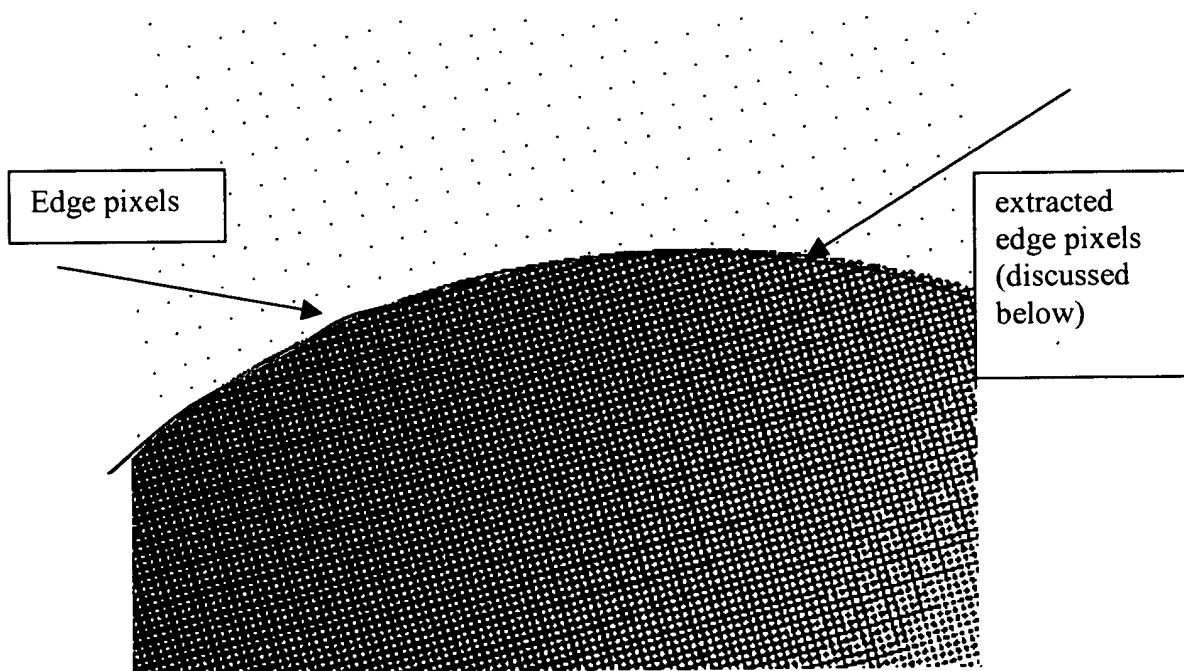


Figure B

14. According to my understanding of the Lee Patent, all of the extracted edge pixels (or "to be adjusted pixels" ("TBAP")) are re-touched/modified by the Lee Patent's edge enhancement method.
15. Also according to my understanding, data representing the image of Figure B (minus the manually-added trace line) would be stored in the FIFO 602 of FIG. 16 of the Lee Patent.
16. Further processing of the image of Figure B, according to my understanding, would then be performed by the EES 604 of the Lee Patent, which would extract the edges of the image using the edge detector 608; the extracted edge pixels are illustrated in Figure B with the manually-added trace line.
17. The edge pixels identified by the edge detector 608, according to my understanding, would then be modified by the Lee Patent's edge enhancement method as shown in Figure C, below.

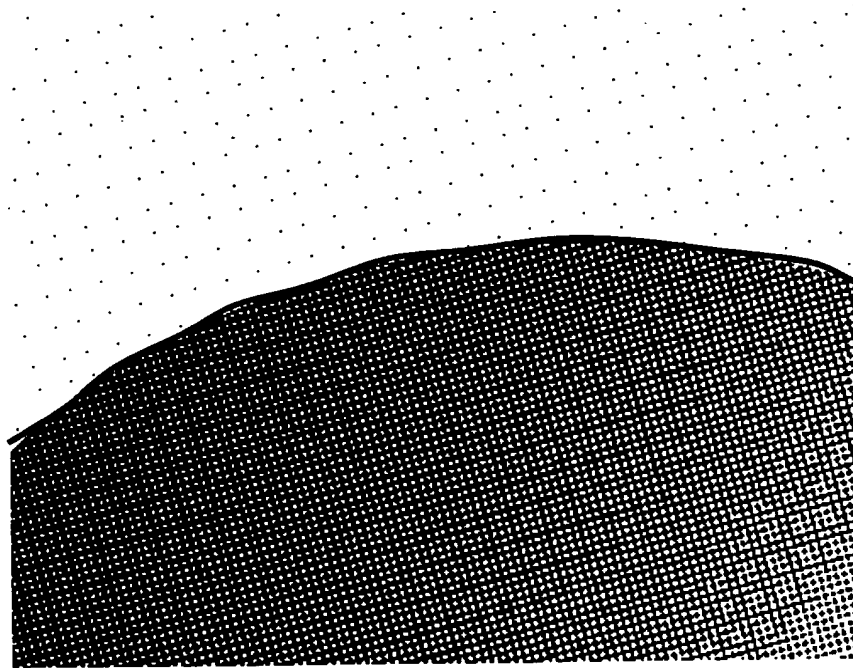


Figure C

18. As illustrated in Figure C, the smooth appearance, the tone, color, and structure of the original tinted image (Figure A) has been modified and degraded by the edge enhancement method performed by the Lee Patent.

19. I further declare under penalty of perjury pursuant to the laws of the  
United States of America that the foregoing is true and correct and that  
this declaration was executed by me on 6/23, 2006  
at Rochester, New York.

Hwai-Tzuu Tai  
Hwai-Tzuu Tai

6/23/06  
Date

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